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No. 87-1346

IN THE

Supreme Court of the United States

OCTOBER TERM, 1988

BONITO BOATS, INC.,

Petitioner,

v.

THUNDER CRAFT BOATS, INC.,

Respondent.

On Writ Of Certiorari To The Supreme Court Of Florida

BRIEF OF AMICUS CURIAE IN SUPPORT OF JUDGMENT BELOW

CHARLES E. LIPSEY
Amicus Curiae, Invited By The Court Per Order of June 30, 1988
FINNEGAN, HENDERSON, FARABOW GARRETT & DUNNER
1775 K Street, N.W.
Suite 600
Washington, D.C. 20006
(202) 293-6850

Of Counsel:
DONALD R. DUNNER
DAVID S. FORMAN
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
1775 K St., N.W., Suite 600
Washington, D.C. 20006
(202) 293-6850

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QUESTION PRESENTED

Whether a state unfair competition statute which prohibits competitive use of publicly known and unpatented process technology in duplicating publicly known and unpatented products is preempted under the Supremacy Clause of the U.S. Constitution by the federal patent law.

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INTEREST OF AMICUS CURIAE

By Order entered June 30, 1988, the undersigned counsel was appointed by the Court as amicus curiae to brief and argue in support of the judgment below.

OPINIONS BELOW

The opinion of the Supreme Court of Florida holding the Florida anti-direct-molding statute unconstitutional on the ground of preemption by the federal patent law is reported at 515 So. 2d 220 (Fla. 1987). It is reproduced for the Court's convenience in the Joint Appendix ("J.A.") at p. 30. The Florida Fifth District Court of Appeals' opinion affirming the dismissal of the Complaint is reported at 487 So. 2d 395 (Fla. Dist. Ct. App. 1986) (J.A.-14). The Florida Circuit Court's order dismissing the Complaint is unreported but is included in the Joint Appendix (J.A.-10).

JURISDICTION

The decision of the Supreme Court of Florida was rendered on November 12, 1987. The jurisdiction of this Court was invoked under 28 U.S.C. § 1257(3).

STATUTES INVOLVED

Due to their length, the statutes involved are reproduced in the Appendix to this brief. They are:

1. The Supremacy Clause of the United States Constitution, article VI, clause 2 (A-1);
2. The Patent and Copyright Clause of the United States Constitution, article I, section 8, clause 8 (A-1);
3. Selected provisions from the federal patent law, Title 35 of the United States Code, including:
   (a) Section 101, defining subject matter for which "mechanical" or "utility" patents may be granted (A-1);
   (b) Section 171, defining subject matter for which "design" patents may be granted (A-1);

(c) Section 102, defining the novelty requirement for patentability (A-1-2);

(d) Section 103, defining the nonobviousness requirement for patentability (A-2); and

(e) Section 112, first paragraph, defining the disclosure requirement for patentability (A-2);

(f) Section 154, defining the rights conveyed by a patent (A-2); and

4. The Florida anti-direct-molding statute, Fla. Stat. § 559.94 (1983), prohibiting the manufacture of boat hulls by means of the "direct molding process", i.e., use of an original manufacturer's product to cast a mold from which that product is duplicated (A-3).

STATEMENT OF THE CASE

The statement of the case contained in the brief of Petitioner Bonito Boats, Inc. ("the Original Manufacturer") is generally accurate. Unfortunately, it starts 200 years too late to provide an adequate factual foundation for resolution of the federal preemption issue in this case.

The application of the Florida anti-direct-molding statute ("the Florida Statute") in this case, as described in Section I below, is relatively straightforward. Full appreciation of the magnitude of the conflict between that statute and the policies underlying the federal patent law, however, also requires historical background, described in Section II below, relating to (1) the scope of the subject matter addressed by the U.S. patent law, (2) the nature of the exclusive rights conveyed by patents, (3) the origins of federal patent policy, and (4) the balance which Congress sought to effect by specifying in the patent law the types of technology it wished to protect and the types of technology it wished to remain free.

I. Application Of The Florida Statute In This Case

The Original Manufacturer's "5VBR" boat hull, which was duplicated by Respondent Thunder Craft Boats, Inc. ("the

Competitor") sometime after July of 1983, had been in public use and on sale in this country since 1976—more than six years before enactment of the Florida Statute (J.A.-5). There is no evidence that a patent application was ever filed on the hull, its method of manufacture, or ornamental aspects of its design (J.A.-4-7). Thus, at the time the Florida Statute was enacted, the 5VBR hull was squarely within the public domain.[1]

The Original Manufacturer does not assert that the direct molding process used by the Competitor was unknown, a trade secret, or the subject of a patent owned by the Original Manufacturer in 1983. Thus, on this record, it must be assumed that the direct molding process was also squarely within the public domain at the time of enactment of the Florida Statute.[2]

The Original Manufacturer asserted the Florida Statute in this case in an attempt to prevent the Competitor from duplicating a publicly known and unpatented boat through use of publicly known and unpatented process technology (J.A.-6). Such use of the statute seems to have been contemplated by the Florida legislature. Indeed, the Supreme Court of Florida found that the sole purpose of the Florida Statute was "to

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[1] According to the patent law, 35 U.S.C. § 102(b), failure to file a patent application within one year of the first public use or offer for sale of an invention in the United States bars issuance of a patent on it.

[2] That such processes were in the public domain within the definition of the patent law in 1983 is clear at least from the fact that some of the statutes seeking to outlaw the practice reproduced in the appendix to the Original Manufacturer's Brief have been on the books since 1978. *See, e.g.*, Cal. Bus. & Prof. Code § 17300 (West 1987). Indeed, expired United States Patent No. 3,413,646, issued to Robert L. Smith, reproduced in the Appendix to this brief (A-13), specifically discloses and claims a direct molding process for making boat hulls. The application for this patent was filed in 1966 and issued in 1968. *See also Stein* v. *Rosenthal*, 103 F. Supp. 227 (S.D. Cal. 1952), *aff'd*, 205 F.2d 633 (9th Cir. 1953) (reporting use of the direct molding process for copying lamp bases in the 1950's).

protect the original manufacturers of boat hulls" from competition based on "an efficient and inexpensive way of duplicating boat hulls." *Bonito Boats, Inc.* v. *Thunder Craft Boats, Inc.*, 515 So. 2d 220, 223 (Fla. 1987) (J.A.-36). Such legislative history as has been mustered is consistent with the court's conclusion.[3]

A majority of the Florida Supreme Court held that the Florida Statute was unconstitutional under the Supremacy Clause of the U.S. Constitution because it conflicted with the policies of the United States patent laws (J.A.-35). The petition for review by this Court followed.

II. Historical Background

A. The Scope Of The Federal Patent Law And Its Relation To The Hull Design And Manufacturing Processes Addressed By The Florida Statute

The patent law broadly defines the subject matter for which patents may be granted in 35 U.S.C. § 101 (1982). Patents may issue on "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof . . . ."[4] This language has been expansively interpreted, both by Congress and this Court, to include "anything

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[3] *See* Transcript of Meetings of Transportation Committee of The Florida House of Representatives, May 3, 1983, at pgs 1-4 (J.A.-21-26); Senate Staff Analysis and Economic Impact Statement (April 29, 1983), as reproduced in the Brief of Amici Curiae Marine Industries Association of South Florida and the Attorney General of the State of Florida In Support of Petitioner at A1-A3.

[4] A "process" within the meaning of the statute includes "a mode of treatment of certain materials to produce a given result" or "an act, or series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing." *Cochrane* v. *Deener*, 94 U.S. 780, 787-88 (1877). The term "art" was used in the 1793 patent law, Act of 1793, § 1, 1 Stat. 319. In 1952, the word "process" replaced the word "art" in 35 U.S.C. § 101 and was defined in 35 U.S.C. § 100(b) as meaning "process, art or method."

under the sun that is made by man." *Diamond* v. *Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952), and H.R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)). *See alo Diamond* v. *Diehr*, 450 U.S. 175, 182 (1981).

The Original Manufacturer does not deny that the patent law contemplates, as subject matter potentially within its scope, technological innovations in boat hull design and methods of boat manufacture. Dozens of examples of patents on boat hulls and methods of making boat hulls could be cited. Illustrative examples of a product patent (U.S. Patent No. 3,930,455, issued to Bremer) and a process patent (U.S. Patent No. 3,419,646, issued to Smith) are reproduced for the convenience of the Court in the Appendix to this brief (A-4, 13). It is noteworthy that the process patent (A-13) specifically claims as the invention a method of making boat hulls by the direct molding process.

The patent laws also provide for the issuance of patents on new and ornamental designs for articles of manufacture. 35 U.S.C. § 171. Dozens of examples of so-called "design patents" on the appearance of boat hulls could be cited, and an illustrative example (U.S. Design Patent No. 235,753, issued to Bremer) is reproduced in the Appendix for the convenience of the court (A-25).[5]

B. The Rights Conveyed By Patents And Their Relation To The Rights Conveyed By The Florida Statute

Both so-called "utility" or "mechanical" patents issued under 35 U.S.C. § 101 and design patents issued under 35 U.S.C. §

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[5] While "utility" patents issued under 35 U.S.C. § 101 protect the novel and nonobvious utilitarian features of boat hull designs or boat hull manufacturing processes, design patents issued under 35 U.S.C. § 171 protect the non-utilitarian ornamental aspects of the boat's appearance. As can be seen from inspection of the design and utility patents issued to Bremer reproduced in the Appendix (A-4, 25), it is not uncommon for both design and utility patents to issue on different aspects of the same product. *See, e.g., Carman Indus., Inc.* v. *Wahl*, 724 F.2d 932 (Fed. Cir. 1983).

171 convey to the patentee the right to exclude others for a limited period of time from "making, using, or selling" the patented invention within the United States. 35 U.S.C. § 154. The term of a utility patent is seventeen years, while the term of a design patent is fourteen years. 35 U.S.C. §§ 154, 173.

The Florida Statute also purports to convey the right to exclude others from "using" certain boat-manufacturing processes and from "selling" certain boat structures and designs. It does so by granting an original boat hull manufacturer the power to seek an injunction against the duplication of its boat hull through the direct molding process and the sale of boat hulls so made. Fla. Stat. § 559.94(4)(1985). Thus, the Florida Statute seeks to create property rights associated with boat hull structures, designs, and manufacturing processes in a field already occupied by the federal patent law. The rights granted by the Florida Statute, however, are perpetual, whereas patents are for a limited period of time. Moreover, the rights granted by the state law are independent of whether the subject matter is in the public domain, whereas patents are issued only for novel and nonobvious advances. 35 U.S.C. §§ 102, 103.

C. The Origins Of The Patent System And Their Effect On Patent Policy

The framers of the Constitution recognized that there was no natural property right in publicly disclosed technology.[6] To the

[6] The public's right to use what is known is central to rejection of any "natural rights" theory. In a letter to Isaac McPherson in August of 1813, Thomas Jefferson observed:

> If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of everyone, and the receiver cannot dispossess himself of it.

VI Writings of Thomas Jefferson, at 180-181 (Washington, ed. 1871), *quoted in Graham* v. *John Deere Co.*, 383 U.S. 1, 8 n.2 (1966). Jefferson's views on patent policy have previously been relied upon by this Court because he was an author of the early patent statutes and was one of the early administrators of the patent system. *Id.* at 7.

A similar view was expressed by this Court in *Wheaton* v. *Peters*, 8 Pet. 591, 658, 8 L.Ed. 1055, 1079 (1834), which involved a copyright dispute between two early reporters of Supreme Court opinions ("[I]t has never been pretended that the [inventor] could hold by the common law, any property in his invention, after he shall have sold it publicly").

extent such a property right was to exist, it could do so only through legislation. *Graham* v. *John Deere Co.*, 383 U.S. 1, 8 (1966). The power to enact that legislation was ultimately granted to Congress in article I, section 8, clause 8 of the Constitution.[7]

At the time the power to create a patent system was given to and exercised by Congress, there was a widespread abhorrence of monopoly. *Graham*, 383 U.S. at 5-9. As this Court has previously observed, it was an artificial monopoly on tea that sparked the Revolution. *Id.* at 7. It is not surprising, therefore, that the legislation for the protection of technological innovation which was created in this environment was one which was narrowly circumscribed. The fundamental limitations on the patent grant have changed little over the years, *Id.* at 10, with the result that the mark of this concern can still be seen in the current patent statutes.

D. Balancing By Congress Of What To Protect And What To Leave Free

The patent law attempts to balance concern over artificial restraints on competition against a conflicting desire to encourage technological innovation. It does so by imposing a series of

[7] The contemporaneous justification for granting Congress the power to legislate in the fields of patents and copyrights was that "[t]he states cannot separately make effectual provision for either of the cases." The Federalist No. 43, p. 309 (B. Wright ed. 1961). Congress ultimately provided *exclusive* jurisdiction to enforce patents in the federal courts. 28 U.S.C. § 1338(a)(1982).

limitations on the patent grant, some of which relate to the requirements for patentability and others of which relate to the duration of the property right. Each such limitation was intended to preserve public access to the subject matter thereby excluded.

The scope of so-called "statutory subject matter" under § 101 of the patent law, for example, is not unlimited. It has been held that "laws of nature, physical phenomena, and abstract ideas" are not within the scope of patentable subject matter because they are "manifestations of . . . nature, free to all men and reserved exclusively to none." *Funk Bros. Seed Co.* v. *Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948). Such discoveries have been characterized as "part of the storehouse of knowledge of all men," *Id.* at 130, and as "the basic tools of scientific and technological work." *Gottschalk* v. *Benson*, 409 U.S. 63, 67 (1972); *see generally Parker* v. *Flook*, 437 U.S. 584, 589 (1978). Thus, the scope of statutory subject matter defined by the United States patent law was circumscribed in order to ensure that the basic tools of technological work remained free to be utilized competitively by others.[8]

The requirement that patentable inventions be "novel" reflects a similar philosophy. 35 U.S.C. § 102. The rationale for this requirement is "founded upon the proposition that in granting patent rights, the public must not be deprived of any rights that it theretofore freely enjoyed." *Parker* v. *Flook*, 437 U.S. at 593 n.15, (quoting P. Rosenberg, *Patent Law Fundamentals* § 4, p. 13 (1975)).

The patent law imposes a standard of patentability beyond mere novelty in order to effectuate the same policy. Specifically, the law prohibits issuance of patents on subject matter which, though novel, would have been "obvious" to persons of ordinary skill in the art at the time that it was developed. 35 U.S.C. § 103. In justifying imposition of such a patentability standard, it was observed that "Congress may not authorize the issuance of patents whose effects are to remove existent knowledge from the public domain, or to restrict free access to materials already available." *Graham*, 383 U.S. at 6. A similar sentiment was expressed in *Great A & P Tea Co.* v. *Supermarket Equip. Corp.*, 340 U.S. 147 (1950) (hereinafter "*A & P*"), where it was held that "[p]atents cannot be sustained when, on the contrary, their effect is to subtract from former resources freely available to skilled artisans." *Id.* at 152-53. It was further noted that a patent may not issue if it "withdraws what already is known into the field of its monopoly and diminishes the resources available to skillful men." *Id.* at 152-53; *see also Sakraida* v. *Ag Pro, Inc.*, 425 U.S. 273, 281 (1976); *Anderson's-Black Rock, Inc.* v. *Pavement Salvage Co.*, 396 U.S. 57, 61 (1969).

Finally, the limitation imposed by Congress on the duration of rights conveyed by patents was intended to ensure that the benefits of the invention are ultimately freely enjoyed by the public. This principle was forcefully applied in *Kellogg Co.* v. *National Biscuit Co.*, 305 U.S. 111, 118 (1938), where, upon expiration of the patents on "shredded wheat" and the processes and machines used to make it, there passed to the public not only the right to make the product but also the right to make it in the "pillow" form dictated by the patented machines as well as the right to call it "shredded wheat." The *Kellogg* Court ultimately concluded that "sharing the goodwill of an article unprotected by patent or trade-mark is the exercise of a right possessed by all—and in the free exercise of which the consuming public is deeply interested." *Id.* at 122.

SUMMARY OF ARGUMENT

Conflict between the Florida Statute and the federal patent law arises because they grant conflicting rights in the same

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[8] Competitive utilization in this context does not necessarily imply an unrestricted right to use the technology. Obviously, both the state and federal governments may exercise their police powers to protect the health, safety, and welfare of their citizens, as by regulating the conditions under which drugs may be sold. Such exercises of police power, however, apply evenly to all competitors in a market.

subject matter. The Florida law protects unpatented boat hulls and boat manufacturing processes in perpetuity and without regard to the novelty or nonobviousness of the subject matter. The patent law protects boat hull designs and boat manufacturing processes only for a limited period of time and only when the product or process is both novel and nonobvious. State-created exclusive rights in technology which Congress has determined should remain in the public domain must yield to the superior federal policy.

The holdings in *Sears, Roebuck & Co.* v. *Stiffel Co.*, 376 U.S. 225 (1964), and *Compco Corp.* v. *Day-Brite Lighting, Inc.*, 376 U.S. 234 (1964) (collectively *"Sears-Compco"*), that state unfair competition laws may not prevent copying of unpatented articles, is based on the recognition that Congress, in crafting the patent law, decided not only what should be protected but also what should remain free. This Congressional decision applies not only to articles but also to machines, compositions of matter, and processes, such as the direct molding process involved in this case, which are also within the scope of the federal patent law. The Florida Statute in this case impermissibly grants the equivalent of a process patent.

The availability of other, more expensive, processes to duplicate the unpatented articles protected by the Florida Statute does not cure the constitutional infirmity. Congress has determined that it is both fair and in the public interest for the public to be free to copy unpatented products and practice unpatented processes. The states are not free to second guess that Congressional judgment by outlawing unpatented processes. State action denying access to efficient manufacturing processes, with attendant increases in cost, strikes at the heart of Congressional policy mandating free competition in unpatented products. The desire of Congress to leave in the public domain the "best" method, not just "some" method, of making unpatented products is confirmed by the fact that the patent law itself requires disclosure and ultimate conveyance to the public of the "best mode" of practicing an invention.

The Federal Circuit's decision in *Interpart Corp.* v. *Italia*, 777 F.2d 678 (Fed. Cir. 1985), sustaining the constitutionality of

the California anti-direct-molding statute, is wrong. The *Interpart* opinion fails to acknowledge that such statutes have the effect of withdrawing unpatented process technology from the public domain and interfere impermissibly with the judgment of Congress that there should be free competition in the market for unpatented products.

Subsequent refinements of the *Sears-Compco* doctrine, permitting states to regulate passing off, unprivileged imitation, breach of trust in connection with confidential information, licensing of confidential information, or rights in technological areas untouched by the patent law, are not implicated by the facts of this case. Nor are common law notions of misappropriation, historically recognized in areas untouched by the copyright law, applicable in this case where the subject matter covered by the Florida Statute is already covered by the patent law.

Together with the utility patent law and the design patent law, the federal copyright law reveals a comprehensive scheme of federal protection for articles of manufacture. Congress has so filled the field of protection of articles of manufacture that supplemental state protection has been preempted.

Any reevaluation of the balance struck by Congress in crafting the federal patent law should be left for Congress. Indeed, there is proposed legislation pending in Congress to deal with the question of copyright-like protection for industrial designs. It would be inappropriate for either the State of Florida or this Court to anticipate the policy judgments of Congress on this issue.

ARGUMENT

I. The Rationale of The *Sears* And *Compco* Decisions Demands Free Access To Unpatented Process Technology And Controls The Outcome Of This Case

A. There Is A Manifest Conflict Between The Florida Statute And The Federal Patent Law

The foregoing Statement of the Case reveals a manifest conflict between the state and federal interests underlying the

Florida Statute and the federal patent law. The Florida Statute withdraws from the public domain publicly known but unpatented process technology which is useful and efficient in the manufacture of publicly known and unpatented boat hull designs. It does so without regard to the novelty or nonobviousness of the designs or processes involved. The state's motive in doing so was not to prevent fraud or consumer confusion. The state has acted instead to protect one class of manufacturers against competition from another class of manufacturers by granting to the former the right to exclude the latter from using public domain technology.

The subject matter of the property right granted by the state is squarely within the scope of subject matter dealt with by the federal patent law. It is equally clear that the state law deals with subject matter which, in this case, Congress has already decided should remain accessible to the public, since it fails to meet the conditions for patentability which have been crafted by Congress and the courts over the years.

The State of Florida manifestly disagrees with the judgment of Congress as applied to the public's right to use the direct molding process in the manufacture of boats. It has promulgated a statute which sets to naught the prior Congressional act. It is well settled, however, that a conclusion of federal preemption is mandated when state law stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress. *Aronson* v. *Quick Point Pencil Co.*, 440 U.S. 257, 262 (1979). The Florida Supreme Court, therefore, correctly concluded that the Florida Statute must yield in this case under the Supremacy Clause of the U.S. Constitution to the contrary policies underlying the federal patent law.

B. The Sears-Compco Decisions Mandate Free Access To Unpatented Process Technology

The Florida Supreme Court grounded its decision that the Florida Statute was unconstitutional and preempted by the federal patent law on this Court's decisions in the *Sears-Compco* cases. Those cases held that the policies underlying the federal patent law precluded enforcement of state unfair competition laws to prevent "copying" of publicly known but unpatented "articles" of manufacture. The patent policy underlying the *Sears-Compco* cases was that "matter once in the public domain must remain in the public domain." *Kewanee Oil Co.* v. *Bicron Corp.*, 416 U.S. 470, 484 (1973). That policy exists because "[t]he standards established for granting federal patent protection . . . indicated not only which articles . . . Congress wished to protect, but which configurations it wished to remain free." *Goldstein* v. *California*, 412 U.S. 546, 569-70 (1973). That the policy against withdrawal of unpatented technology from the public domain is in fact one of the cornerstones of the federal patent law is manifest from the previously described historical development of the law.

The Original Manufacturer in this case does not deny the existence of such a policy or contend that the *Sears-Compco* cases should be overruled. Rather, it suggests that the rule of law announced there does not extend to state statutes which prohibit use of a particular *process* in duplicating unpatented articles so long as those articles can be duplicated using some other, albeit less efficient, process. According to the Original Manufacturer, such statutes do not offend the policy underlying the federal patent law because they do not remove the unpatented "article" from the public domain.

The Original Manufacturer's argument is fatally flawed in several respects. First, it fails to apprehend that the above-described federal policy is not restricted to articles of manufacture but extends to processes, machines, and compositions of matter as well. It is true that the particular technological innovations involved in the *Sears-Compco* cases were articles of manufacture and the form of competitive use by others discussed in that case was "copying." It is not surprising, therefore, that the Court's holding was couched narrowly in terms of nullifying state unfair competition laws which prevent "copying" of unpatented "articles" of manufacture. As has been

previously demonstrated, however, the scope of technological innovation for which patents may be granted includes much more than "articles" of manufacture. It also includes processes, compositions of matter, and machines. 35 U.S.C. § 101. The result in *Sears-Compco* would have been no different had the unpatented thing appropriated by the defendant been a "machine" or a "process."

Moreover, the term "copying", as used in the *Sears-Compco* cases, must be read as simply a shorthand expression for the types of competitive uses which would have been prohibited by a valid patent, had it existed. These activities are defined in the patent statute, 35 U.S.C. § 154, without reference to the word "copying." Instead, the prohibited acts are defined as "making, using, or selling" the thing patented in the United States.[9] The policies underlying the federal patent laws referred to in the *Sears-Compco* cases demand that states be prohibited from limiting, under the guise of unfair competition laws, a competitor's right "to make, use, or sell" (the statutory equivalent of "copying" in *Sears*) any publicly known but unpatented "process, machine, [article of] manufacture, or composition of matter" (the statutory equivalent of "product" in *Sears*). To do otherwise would allow states to confer by statute some or all of the rights which would have been conveyed by patents.[10]

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[9] The Original Manufacturer concedes this point by characterizing *Sears* at page 23 of its Brief as holding that "state law may not provide a manufacturer of an unpatented product the right to exclude others from making, using, or selling that product." It is noteworthy in this regard that Sears, unlike Compco, was not actually manufacturing copies. Sears was only "selling" lamps which it purchased on the open market from an independent manufacturer. *Stiffel Co.* v. *Sears, Roebuck, Co.*, 162 F. Supp. 637, 638 (M.D.N.C. 1958) (deciding transfer motion).

[10] The federal copyright law supports the proposition that federal preemption extends to state statutes granting rights equivalent to *any* of the rights conveyed by a patent. The express preemption provisions of the copyright law enacted in 1976 extend to state laws which grant "rights that are equivalent to *any* of the exclusive rights within the general scope of copyright." 17 U.S.C. § 301(a) (emphasis added).

The State of Florida has attempted to prohibit, under the guise of an unfair competition statute, the "using" by a competitor of a publicly known but unpatented "process", specifically, the direct molding process. In so doing, it has run afoul of the *Sears-Compco* doctrine.

C. The Florida Statute Unlawfully Grants Rights Substantially Equivalent To A Process Patent

In direct contravention of the mandate of *Sears-Compco*, the Florida Statute grants rights substantially equivalent to a process patent. Such a patent would preserve for the originator of a process the right to exclude others from "making, using, or selling" that process in the United States. Since the economic value of technological processes is generally realized by "using" them, the right to exclude others from "using" a patented process is by far the most significant aspect of the process patent grant. This is exactly the effect of the Florida Statute.

The Florida Statute places the right to exclude others from using the direct molding process in the hands of the private citizens who manufactured the original boat hulls. To be sure, the right granted each individual boat manufacturer is a narrow one, restricted to duplication of the boats which it has sold. In the aggregate, however, the effect of the statute is essentially to eliminate from the storehouse of technology available to competitive manufacturers of boats the direct molding process for the manufacture of *any* boat hull in the public domain.

The Florida Statute grants this exclusive right without regard to whether that process technology is even minimally novel. It does so without regard to whether that process technology would have been obvious to persons of ordinary skill in the art. Moreover, it has removed that process technology from the public domain not just for a limited time, as mandated under the patent law, but in perpetuity.

In *Sears*, the Court held:

> Obviously a State could not, consistently with the Supremacy Clause of the Constitution, extend the life of a patent beyond its expiration date or give a patent on an

> article which lacked the level of invention required for federal patents. To do either would run counter to the policy of Congress of granting patents only to true inventions, and then only for a limited time.

376 U.S. at 231 (footnote omitted). If one substitutes for the word "article" in the above quoted portion of the *Sears* opinion the statutory definition of patentable subject matter from 35 U.S.C. § 101, i.e., "process, machine, [article of] manufacture, or composition of matter", then the holding of *Sears* squarely governs the present case on both counts.[11]

II. The Availability Of More Expensive Processes For Duplication Of Products Protected By The Florida Statute Does Not Cure The Constitutional Infirmity

The Original Manufacturer's statement of the question presented in this case, that is, whether a state may outlaw a particular method of copying unpatented articles which it regards as unfair as long as other methods for copying the article are available, must be answered in the negative.

A. Congress Has Already Determined That Use Of Unpatented Technology Is Fair

Prior to enactment of the Florida Statute, a competitor lawfully acquiring access to an unpatented boat could lawfully copy it in every detail. It could do so by practice of the direct

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[11] By purporting to forbid sale of boats made by direct molding, the Florida Statute gives a boat hull originator not only the perpetual right to exclude others from using the process of manufacturing its boat hull by direct molding but also purports to give the originator exclusive rights in the boats so produced. Thus, the Florida Statute, in effect, grants a "product-by-process" patent on the 5VBR boat hull whenever manufactured by the direct molding process. A "product-by-process" claim in a patent conveys the right to exclude others from making, using, or selling the defined product, but only when made by the process specified in the patent claim. *See* D. Chisum, *Patents* § 8.05, at 8-67 (1988). The patent law recognizes such claims as potentially patentable, but only when the resulting product is novel and nonobvious. *In re Thorpe*, 777 F.2d 695 (Fed. Cir. 1985).

molding process, which was also then in the public domain. These capacities were among the "resources available to skilled artisans" from which Congress had decided patents "cannot" subtract. *A&P*, 340 U.S. at 152-53.

The *Kellogg*, *Sears*, and *Goldstein* cases recognize that Congress has determined that subject matter not protected by a valid patent grant should be free for the public to use. The factual analysis of the reasons underlying the limitations on patent rights in the foregoing Statement of the Case confirms the rectitude of that view. The natural consequence of Congressional judgment to leave certain technology free is that it cannot be "unfair" for a member of the public to use it. Indeed, it is recognition of this consequence which underlies the 1938 holding in *Kellogg*, the 1964 holding in the *Sears-Compco* cases, and the 1987 holding of the Florida Supreme Court in this case.

Congress made what must have been a difficult decision in drawing the lines between protection and free competition embodied in the patent law. The Original Manufacturer and its supporting amici invite this Court to review the difficulty of that decision as they parade the consequences of the resulting competition through the pages of their briefs. That the decision may have been difficult does not diminish the fact that Congress has already made a policy judgment. That judgment was that it is lawful for competitors to make, use, and sell unpatented articles and to use unpatented processes. Congress has already determined that such use is not only fair but is to be encouraged for the greater public good. *Kellogg*, 305 U.S. at 122. If segments of society feel that Congress erred in so concluding, then the grievance is redressable in Congress—not in the state legislature and not in the courts. The Florida Supreme Court so held and was manifestly correct in doing so.

B. Withdrawal Of The Best Mode Of Making Unpatented Products Materially Compromises The Congressional Intent To Place Those Products In The Public Domain

The selective withdrawal of unpatented process technology, even if it does not create an absolute bar to sale of the unpa-

tented article made by it, raises a barrier to prompt public utilization of that unpatented product which itself offends the policies underlying the patent law. Specifically, state interference with the *techniques* used to duplicate an unpatented product materially compromises the federally-protected right to compete freely in the market for such products.

A fundamental tenet of a free market economy is that competition will result in lower prices and increased manufacturing efficiency. A competitor, in the exercise of sound business judgment, may well conclude that its manufacturing efficiency can be enhanced and its prices lowered by use of the direct molding process to duplicate an unpatented article. State interference with implementation of that decision strikes at the very heart of the benefits to be derived from the Congressional decision to allow competition in the manufacture and sale of the article in the first place. Indeed, the sole purpose of the Florida statute is to *prevent* manufacturing efficiencies and lower prices. This view led the Supreme Court of Florida to hold correctly that "a competitor is not 'unscrupulous' in the eyes of the patent law if he copies someone else's unpatented invention, irrespective of the manner employed to make the copy" (J.A.-35).

The patent law speaks to this very issue in 35 U.S.C. § 112, first paragraph. The statute not only requires the patent application to contain a written description of the invention which enables artisans to practice it but also requires disclosure of "the best mode of practicing the invention" then known to the inventor. The manifest purpose of this provision is to ensure *effective* conveyance of the invention to the public. Indeed, it was recognized early on in the patent system that concealment of the best mode of practicing a patented invention so compromised the public's ability to benefit from the invention that it was grounds for invalidating a patent.[12]

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[12] The best mode requirement is derived in part from a defense recognized in the Patent Act of 1790 based on the patentee's failure to disclose "the whole truth relating to his invention." Act of April 10, 1790, ch. 7, § 6, 1 Stat. 109. *See generally*, D. Chisum, *Patents* § 7.02 (1988). As described by the Federal Circuit, the so-called "enablement" requirement of 35 U.S.C. § 112, first paragraph, looks to placing the patented invention "in the possession of the public." *Spectra-Physics, Inc.* v. *Coherent, Inc.*, 827 F.2d 1524, 1532 (Fed. Cir.), *cert. denied*, 108 S. Ct. 346 (1987). The court went on to note that:

> If, however, the applicant [for patent] develops specific instrumentalities *or techniques* which are recognized at the time of filing [the patent application] as the best way of carrying out the invention, then the best mode requirement [of 35 U.S.C. § 112, first paragraph] imposes an obligation to disclose that information to the public as well.

Id. (emphasis added) (citation omitted). Thus in *Spectra-Physics*, a patent on an *article* of manufacture—a laser—was found invalid for failure to reveal to the public the best *process* for manufacturing that article.

It is, therefore, an affirmative policy of the patent law that the public have access to the "best" known technique, not just "some" technique, for practicing *patented* inventions which pass into the public domain. That policy is offended by concealing the best technique from the public. The policies underlying the patent statute would be no less offended by state action reserving for the inventor, under the guise of state unfair competition legislation, the best mode of practicing *unpatented* inventions which are already in the public domain.

It is reasonable to infer that the direct molding process is the "best mode" of manufacturing the unpatented products in this case. It would make little sense to seek legislation to outlaw it if it were not. A state law denying competitive access to that technique offends the policies of the patent law.

C. It Is Impractical To Distinguish Between Fair And Unfair Duplication Technologies

The Original Manufacturer attempts to draw a totally illogical distinction between copying by direct molding (which

is said to be "unfair", "unscrupulous", and "predatory") and copying by independent reconstruction of a mold based on measurement of the original manufacturer's boat (which is said to be permissible).[13] Both techniques fit squarely within common notions of "reverse engineering" sanctioned by this Court in *Kewanee*. Both involve an element of reaping where one has not sown. In both techniques, the originator's basic design work and risk analysis inure to the benefit of the subsequent copier. The only rational distinction between the two types of copying is that one is faster and less expensive and, therefore, more efficient than the other.

The attempt to distinguish between legal and illegal duplication technologies on the ground of effectiveness immediately raises the question of where the line is to be drawn between methods of copying which are too effective to be tolerated and those which are sufficiently ineffective to be permitted. The answer is that no rational line between the two can be drawn. The judgment of unfairness being essentially arbitrary, there is no practical way to limit the number or nature of technologies which a state might deem unfair.

III. The Federal Circuit Erred In Sustaining The California Direct Molding Statute In The Interpart Case

The Original Manufacturer and the assorted amici supporting its position place much weight on the decision of the U.S. Court of Appeals for the Federal Circuit in *Interpart*. Following a brief analysis, the Federal Circuit there sustained the California anti-direct molding statute against a Constitutional preemption challenge. In reaching its decision, the Federal Circuit did not consider the fact that the direct molding statute there in issue granted the equivalent of process patent protec-

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[13] Inflammatory adjectives do not aid analysis in this case. If the Competitor in this case had a legal right to copy the Original Manufacturer's boat hull using the direct molding process, it cannot have been "unscrupulous" for it to have done so. *See, e.g., International News Serv.* v. *Associated Press*, 248 U.S. 218, 259 (1918) (Brandeis, J., dissenting).

tion on the direct molding process as applied to the goods of individual manufacturers. Moreover, the Federal Circuit did not address the evidence of a strong policy of the federal patent law in preserving free and open competition in unpatented products and processes previously described in detail.[14] Simply stated, the Federal Circuit erred in its application of the *Sears-Compco* doctrine to this issue, and the majority of the Florida Supreme Court so held.

Beyond the foregoing, the Federal Circuit's holding in *Interpart* is far from clear. Specifically, it stated its ultimate conclusion on preemption in a somewhat enigmatic manner, holding:

> *Absent an existing patent right*, we see nothing in the federal patent statutes that conflicts with California's desire to prevent a particular type of competition which it considers unfair.

777 F.2d at 685 (emphasis added). The reader is left to speculate in vain regarding the meaning of the emphasized introductory phrase. Would the conclusion have been different had there been an "existing patent right"? If so, is not the California statute, which applies regardless of whether or not there is an existing patent right, fatally overbroad?[15]

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[14] The Federal Circuit cited *Mine Safety Appliances* v. *Electric Storage Battery*, 405 F.2d 901, 902 n. 2 (C.C.P.A. 1969), as authority for the proposition that the patent laws "say nothing about the right to copy or the right to use, they speak only in terms of the right to exclude." The cited case had nothing whatsoever to do with federal preemption of state unfair competition laws. By its terms, it was only "concerned with . . . the statutes pertaining to trademark registration and the case law construing those statutes." *Id.* While acknowledging that some arguments had been advanced based on the *Sears* and *Compco* cases, the court specifically noted that "we find it unnecessary . . . to consider their applicability." *Id.*

[15] Application of the *Interpart* holding to the facts of this case reveals its frailty. There exists an expired U.S. patent on direct molding processes for making boat hulls (A-9). Thus, there is no

IV. Subsequent Refinements Of The *Sears-Compco* Doctrine Do Not Alter The Result In This Case

Although the *Sears-Compco* doctrine has been refined over the years by this Court and the lower federal courts, nothing has emerged from those refinements which reduces the applicability of the *Sears-Compco* rulings to the facts of this case. The analysis leading to this conclusion has been ably articulated and rearticulated by the three Florida state courts which have passed on the issue (J.A.-10, 14, 30).

None of the commercially reprehensible conduct sometimes associated with "copying" is present in this case. Thus, there is no allegation of fraud, deception, passing off, or unprivileged imitation of nonfunctional trade dress or product configuration which has acquired a secondary meaning. Nor is there any allegation of theft of trade secrets, breach of fiduciary relationship, or breach of contract. Accordingly, language in the *Sears-Compco* opinions and in the opinions of the lower federal courts indicating that federal preemption does not reach state regulation of such conduct is inapposite.

The Original Manufacturer places particular reliance on *Kewanee Oil Co.* v. *Bicron Corp.*, 416 U.S. 470 (1974), *Aronson* v. *Quick Point Pencil Co.*, 440 U.S. 257 (1979), and *Goldstein* v. *California*, 412 U.S. 546 (1973). Each of these decisions permitted some state regulation of certain aspects of intellectual property law. Yet, the rule of law announced in the *Sears-Compco* cases was reaffirmed in each of these subsequent opinions, and the refinements on the basic doctrine announced in those cases are not implicated in the present case.

"existing patent right" within the meaning of the *Interpart* holding. Yet, the authorities are legion that federal patent policy demands that that process be freely and immediately available to competitors upon patent expiration. To the extent that the California statute could be used to perpetuate in any way a continuing monopoly on a patented process after patent expiration, it would clearly run afoul of a very fundamental tenet of the patent system.

A. This Case Does Not Involve Confidential Information

In *Kewanee*, the *Sears-Compco* doctrine was found not to extend to state protection of confidential information which is not in the public domain. Thus, state trade secret laws may lawfully protect such confidential information from discovery by improper means or through breach of trust without disrupting the policies of the patent law.

The critical point of distinction between this case and *Kewanee* appears from the Court's statement that:

> Similarly, the [patent law] policy that matter once in the public domain must remain in the public domain is not incompatible with the existence of trade secret protection. By definition, a trade secret has not been placed in the public domain.

416 U.S. at 484 (footnote omitted).

Both the configuration of the boat hull and the direct molding process for duplicating it in this case were in the public domain. There is no allegation of appropriation of a secret design or of a secret method in this case. Accordingly, the trade secret refinement of the *Sears-Compco* doctrine is not implicated.[16]

B. This Case Does Not Involve Contracts To License Confidential Information

An obvious outgrowth of the viability of state trade secret law is that a contract to pay royalties in exchange for the right to use confidential information of another is not preempted by the federal patent law. This logical conclusion was reached by

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[16] Amici in support of the Original Manufacturer contend that use of the direct molding process misappropriates the confidential tooling used to make the original boats. The contention does not withstand analysis. To the extent the original tooling can be derived or duplicated from inspection or use of a product sold on the open market, it is no longer proprietary under any accepted definition of a trade secret. *See Kewanee*, 416 U.S. at 476.

this Court in *Aronson*. It was there held that a licensee, who received the details of a confidential product idea in exchange for a promise to pay royalties based on subsequent commercialization of the idea, was not relieved of his contractual obligation to do so simply because his acts of commercialization revealed the idea to competitors, who were then free to copy the product without any royalty obligation.

The critical distinction between this case and *Aronson* is again apparent from the Court's opinion, which stated:

> Enforcement of the agreement does not withdraw any idea from the public domain. The design for the key holder was not in the public domain before Quick Point obtained its license to manufacture it.

440 U.S. at 263. There is no allegation in this case that the idea for the duplicated boat hull was confidential at the time the Competitor duplicated it or that the Competitor had contractually agreed to pay the Original Manufacturer for the right to manufacture the boat in exchange for the disclosure of then confidential information. Accordingly, this refinement of the *Sears-Compco* doctrine is inapplicable.

C. This Case Does Not Involve Technological Areas Untouched By The Patent Law

In *Goldstein*, this Court held that the *Sears-Compco* doctrine would not prevent state regulation of copying in an area in which Congress had not acted. Specifically, it was held that Congress' failure prior to 1972 to protect sound recordings under the copyright law justified state action in that area. That void was filled with federal legislation in 1972. This Court specifically distinguished the pre-1972 situation in the copyright law, where no protection for certain classes of works had even been contemplated by the existing law, from the pervasive protection provided by the patent law in the field of technological innovation. The Court in *Goldstein* observed:

> In regard to mechanical configurations, Congress had balanced the need to encourage innovation and originality against the need to insure competition in the sale of identical or substantially identical products. The standards established for granting federal patent protection to machines thus indicated not only which articles in this particular category Congress wished to protect, but which configurations it wished to remain free. The application of state law in these cases to prevent the copying of articles which did not meet the requirements for federal protection disturbed the careful balance which Congress had drawn and thereby necessarily gave way under the Supremacy Clause of the Constitution.

412 U.S. at 569-70.

The Original Manufacturer in this case does not contend that boat hulls and methods of making boat hulls are not comprehended by the patent law. In fact, the broad scope of the patent statutes and their applicability to innovations of the sort involved here has been previously established. That being the case, the rationale of *Goldstein* is simply inapplicable to the facts of this case.[17]

V. The INS Decision Does Not Govern This Case

Amici in support of the Original Manufacturer have suggested that this Court's decision in *International News Serv.* v.

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[17] Although not urged by the Original Manufacturer, amici supporting its position suggest that decisions of this Court and lower federal courts recognizing a "right of publicity" which may not be preempted by federal patent or copyright law somehow support their position. Illustrative of such cases in *Zacchini* v. *Scripps-Howard Broadcasting Co.*, 433 U.S. 563 (1977). The right of publicity, however, unlike property rights in publicly disclosed technological innovations, has its roots in the common law, more specifically, in the law of privacy. The publicity value of an act of entertainment is not something that was ever contemplated for inclusion within the scope of the patent or copyright law. Accordingly, the analysis in *Goldstein* suggests that even if state law protection of the right of publicity is not preempted by the federal patent and copyright laws, the reasons underlying that conclusion are inapplicable to this case. There being no allegation of violation of a "right of publicity" in this case, this refinement of the *Sears-Compco* doctrine is inapplicable.

Associated Press, 248 U.S. 218 (1918) (hereinafter *"INS"*), should impact on the outcome of this case. To be sure, *INS* reflects a general human and judicial inclination to create a legal remedy wherever it appears that one individual has profited from the ingenuity and industry of another. The majority in *INS* gave vent to that inclination by recognizing a quasi-property right in fresh news. That property right would have prevented one competitive news-gathering organization from publishing news gathered by another such organization, even after it had been publicly disseminated, for as long as the information had commercial value as news. The Court was compelled to create such a right since the federal copyright law did not recognize any property rights in news.

The majority's reaction to the facts in *INS* undoubtedly reflects the same sympathies that must have influenced the lower courts in the *Sears* and *Compco* cases to enjoin the acts of copying before them and that moved the Florida legislature to seek to prohibit duplication of the sort involved in this case. The *Kellogg*, *Sears*, *Compco*, and *Goldstein* cases, however, make clear that it is a significant policy of the U.S. patent laws that copying of publicly known but unpatented articles, machines, compositions of matter, and processes must be permitted. It is obviously a bitter pill for some to swallow, but Congress has determined that it is good medicine for a competitive economy. Even good medicine may leave a bad taste in the mouth.

The inapplicability of the *INS* rationale to preemption issues of the sort presented in this case is manifest from the fact that boat hulls and direct molding processes for making boat hulls are squarely within the scope of the existing federal patent law. This fact distinguishes this case from the *INS* situation, in which there was no treatment of the subject matter under the federal copyright law. Moreover, extension of *INS* to situations where federal patent policies override state unfair competition laws seems to have been rejected in this Court's subsequent *Kellogg*, *Sears*, and *Compco* rulings.

VI. Reference To The Federal Copyright Law Confirms The Conclusion Of Preemption

Various amici have argued for and against preemption in this case by the express preemption provision of the 1976 federal copyright act. 17 U.S.C. § 301 (1976).[18] The argument for preemption under the copyright law itself is persuasive. Moreover, reference to the copyright law in the context of the preemption theories previously advanced based on the utility patent and design patent laws, which alone amply warrant affirmance of the judgment below, further confirms the wisdom of the judgment of the Florida Supreme Court.

The three statutes reveal a pervasive scheme of federal protection in the area of publicly disseminated articles. The utility patent law, 35 U.S.C. § 101 *et seq.*, protects, to the extent deemed wise by Congress, the utilitarian aspects of articles of manufacture. The design patent law, 35 U.S.C. § 171 *et seq.*, protects, to the extent deemed wise by Congress, ornamental designs for articles of manufacture. The copyright law, 17 U.S.C. § 101 *et seq.*, protects, to the extent deemed wise by Congress, sculptural works embodied in articles of manufacture. The field of protection against duplication of publicly disseminated articles of manufacture has been so filled with federal legislation that it would be imprudent to allow interstitial state protection of articles of the sort involved in this case. *See, e.g., California Federal Sav. & Loan Assn.* v. *Guerra*, 107 S. Ct. 683, 689 (1987) (comprehensive scheme of federal regulation raises reasonable inference that no room is left for state regulation).[19]

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[18] Brief of Amicus Curiae Certified Automobile Parts Association In Support of Respondent (arguing for preemption); Brief Amici Curiae of the Orange County Patent Law Association and the Los Angeles Patent Law Association In Support of Petitioner at 15-23 (arguing against preemption).

[19] Amicus IPO points to the Semiconductor Chip Protection Act of 1984, ("Chip Act"), P.L. No. 98-620, 17 U.S.C. §§ 901-914, and argues

VII. Any Reevaluation Of The Balance Between Competition And Incentive For Innovation Struck By The Patent Laws Should Be Left To Congress

The Original Manufacturer seeks in essence to have this Court restrike the balance between free and open competition and stimulation of innovation to tip it further toward the latter than Congress has in promulgating the existing patent law. This Court has repeatedly recognized that such fundamental policy decisions are for the legislature to make based on the thorough investigative powers at its disposal. *See, e.g., Diamond* v. *Chakrabarty*, 447 U.S. at 317-18; *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518, 530-31 (1972).[20]

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that the protection provided by that Act is analogous to the Florida anti-direct-molding statute. Section 912(c) explicitly preempts all state laws that provide rights or remedies equivalent to the Chip Act. IPO suggests that Congress acknowledged that the states previously had a right to prevent copying of semiconductor chips when Congress provided in § 912(c) that "such preemption shall be effective only with respect to actions filed on or before January 1, 1986."

The Chip Act is a new form of protection, in a class by itself, established to meet the needs of the masking technologies used in the relatively new semiconductor chip field. The scheme for protection of mask work is closely analogous to copyright, and dissimilar to patents, hence the codification of the Chip Act in Title 17 of the United States Code. In the absence of direct evidence that Congress actually felt that existing state laws could prevent the copying of mask works (and IPO cites no such evidence), it is logical to presume that it was simply prudent legislative drafting to include a provision such as § 912(c) in the Act, analogous to 17 U.S.C. § 301(b)(2), to phase in this new form of protection.

[20] In the *Deepsouth* case, for example, this Court refused to extend the territorial effect of the United States patent laws to reach as acts of infringement shipment from within the United States of elements of a patented combination for ultimate combination outside the United States. This Court instead deferred to Congress to make the judgment of whether or not the scope of exclusive rights cognizable under the federal patent system should be broadened. Congress in fact considered the issue and broadened 35 U.S.C. § 271 of the patent statute by adding § 271(f) to reach such situations in 1984. Public Law 98-622, sec. 101, 98 Stat. 3383.

Congress now has before it proposed legislation to confer a short-term, copyright-like protection on industrial designs. H.R. 1179, 100th Cong., 1st Sess. (Feb. 19, 1987). *See generally* Brown, *Design Protection: An Overview*, 34 U.C.L.A. L.Rev. 1341 (1987). Hearings were held in June of this year before the House Subcommittee on Courts, Civil Liberties and the Administration of Justice which generated considerable debate on the competitive effects of such legislation. *See generally House Panel Hears Testimony on Design Protection Legislation*, 36 Pat. Trademark & Copyright J. BNA at 242 (June 30, 1988). In many respects, that debate parallels the issues presented to this Court in this case.

Congress is the only forum in which the question of additional design protection can be handled on a national scale. A patchwork of inconsistent state laws cannot effectually deal with the issue, as the framers of the Constitution realized in creating a federal patent system in the first place (see Footnote 7, *supra*). The debate is currently before Congress, and that is where it belongs. This Court should decline the offer to anticipate the judgment of Congress.

CONCLUSION

For the reasons set forth above, amicus curiae appointed by the Court to brief and argue the case in support of the judgment below respectfully submits that the judgment of the Florida Supreme Court should be affirmed.

CHARLES E. LIPSEY
Amicus Curiae, Invited By The Court Per Order of June 30, 1988
FINNEGAN, HENDERSON, FARABOW
GARRETT & DUNNER
1775 K Street, N.W.
Suite 600
Washington, D.C. 20006
(202) 293-6850

Of Counsel:
DONALD R. DUNNER
DAVID S. FORMAN
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER
1775 K St., N.W., Suite 600
Washington, D.C. 20006
(202) 293-6850

APPENDIX

APPENDIX

Statutes Involved

1. United States Constitution, Art. I, §8, cl. 8: The Congress shall have Power:

   To promote the Progress of Science and the useful Arts, by securing for limited times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.

2. U.S. Constitution, Art. VI, cl. 2:

   This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.

3. Title 35, United States Code, § 101:

   § 101 Inventions Patentable

   Whoever invents or discovers any new and useful process, machine, manufacture or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Title 35, United States Code, § 171:

   § 171 Patents for Designs

   Whoever invents any new, original and ornamental design for an article of manufacture may obtain a patent therefor, subject to the conditions and requirements of this title. . . .

5. Title 35, United States Code, § 102:

   § 102 Conditions for Patentability; Novelty and Loss of Right to Patent

A person shall be entitled to a patent unless--

(a) the invention was known or used by others in this country, or patented or described in a printed publication

in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, ...

6. Title 35, United States Code, § 103:

§ 103 Conditions for Patentability; Non-obvious Subject Matter

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made. . . .

7. Title 35, United States Code, § 112:

§ 112. Specification

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Title 35, United States Code, § 154:

§ 154 Contents and Term of Patent

Every patent shall contain a short title of the invention and a grant to the patentee, his heirs or assigns, for the term of seventeen years, subject to the payment of fees as provided for in this title, of the right to exclude others from making, using, or selling the invention throughout the United States, referring to the specification for the particulars thereof. A copy of the specification and drawings shall be annexed to the patent and be a part thereof.

9. The Florida Statute, Fla. Stat. § 559.94 (1983):

§ 559.94 Duplication of vessel parts; action for injunctive relief against illegal duplication or against sale of illegally duplicated vessel parts.

(1) As used in this section, the term:

(a) "Direct molding process" means any direct molding process in which the original manufactured vessel hull or component part of a vessel is itself used as a plug for the making of the mold, which mold is then used to manufacture a duplicate item.

(b) "Mold" means a matrix or form in which a substance or material is shaped.

(c) "Plug" means a device or model used to make a mold for the purpose of exact duplication.

(2) It is unlawful for any person to use the direct molding process to duplicate for the purpose of sale any manufactured vessel hull or component part of a vessel made by another without the written permission of that other person.

(3) It is unlawful for any person to knowingly sell a vessel hull or component part of a vessel duplicated in violation of subsection (2).

(4) Any person who suffers injury or damage as the result of a violation of the provisions of this section may bring an action in circuit court for an injunction prohibiting such violations. In addition, such person shall be entitled to actual damages incurred as a result of such violation and to reasonable attorney's fees and costs.

(5) The provisions of this section apply only to vessel hulls or component parts of vessels duplicated through use of molds made on or after July 1, 1983.

114-290. XR 3,930,455 SR

United States Patent [19]

Bremer

[11] **3,930,455**

[45] **Jan. 6, 1976**

[54] **BOAT HULL CONSTRUCTION**

[76] Inventor: **Harry Bremer**, P.O. Box 488, Elkhart Lake, Wis. 53020

[22] Filed: **Sept. 19, 1974**

[21] Appl. No.: **507,260**

[52] U.S. Cl. ..... 114/56; 9/6 P; 114/66.5 R

[51] Int. Cl.² B63B 1/20

[58] Field of Search ..... 114/56, 61, 62, 63, 66.5 R, 114/66.5 S, 66.5 F, 70; 9/6 P, 6 M, 6 R; 115/39

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Primary Examiner—Trygve M. Blix
Assistant Examiner—Charles E. Frankfort
Attorney, Agent, or Firm—Andrus, Sceales, Starke & Sawall

[57] **ABSTRACT**

A boat hull construction having a bottom formed with a central longitudinal surface and side surfaces spaced on either side of the central surface. Both the central surface and the side surfaces are flat in a cross sectional direction, and the side surfaces are separated from the central surface by upwardly arched channels. The three parallel flat surfaces enable the boat to plane at lower speeds and provide improved lateral stability.

6 Claims, 6 Drawing Figures

Fig. 1

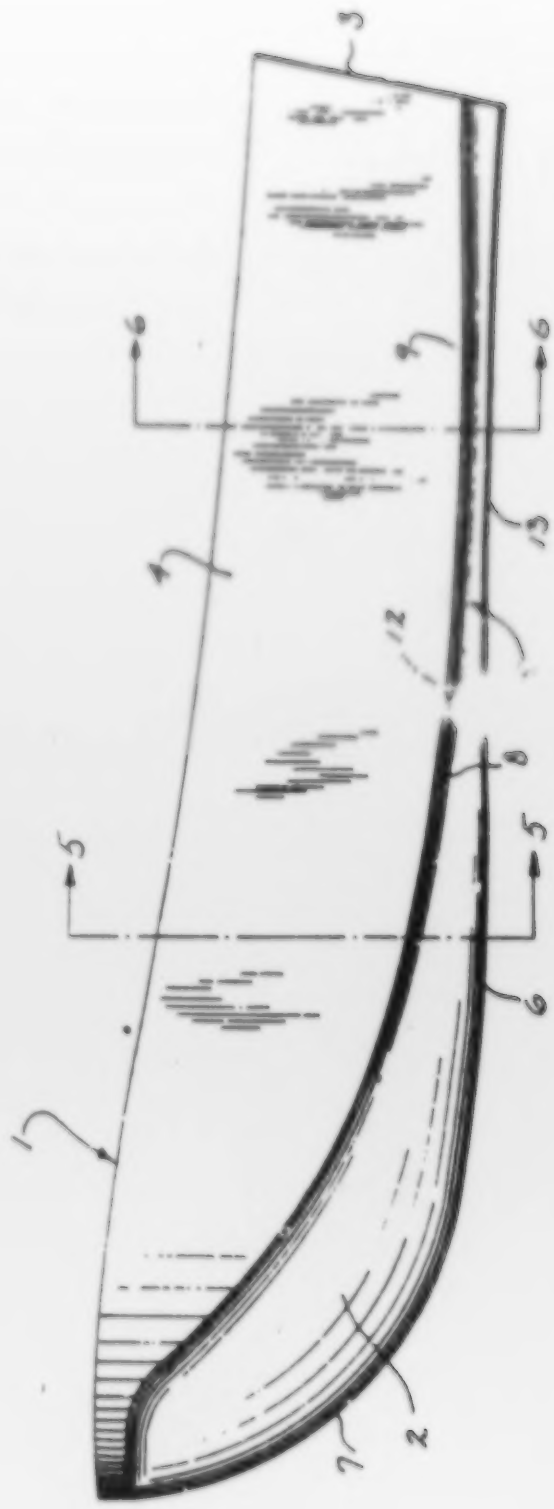


Fig. 2

Fig. 3

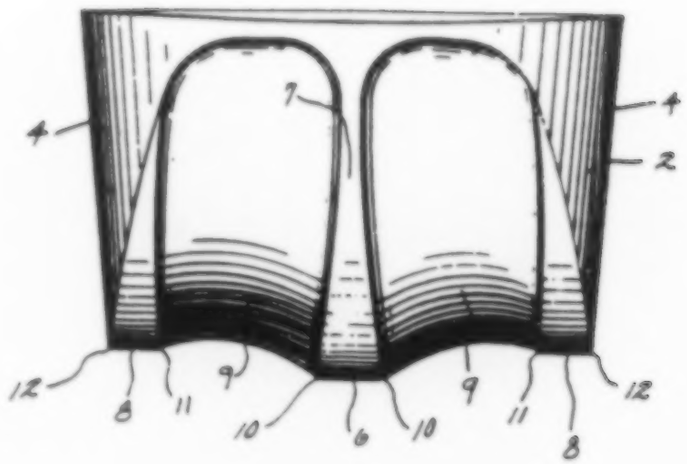


Fig. 4

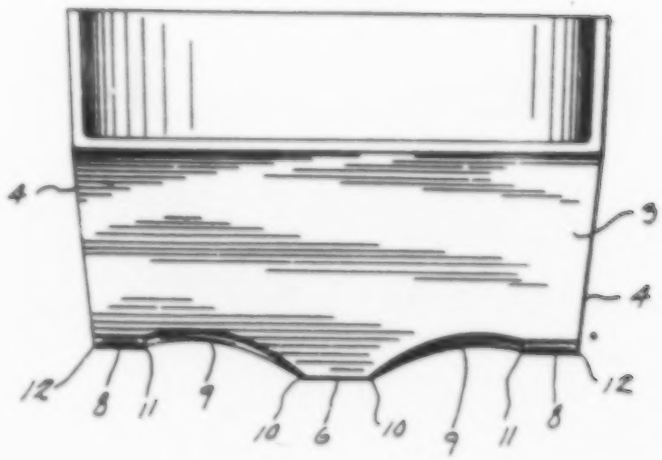


Fig. 5

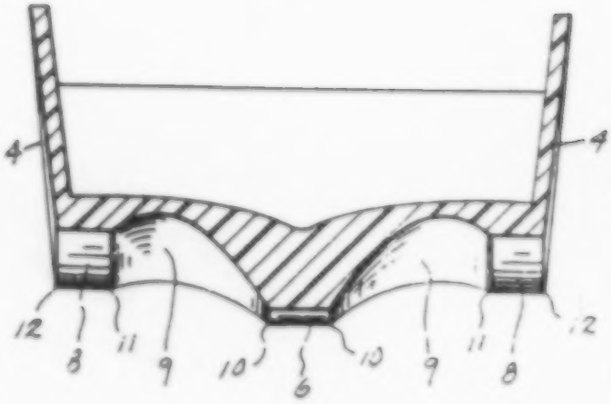
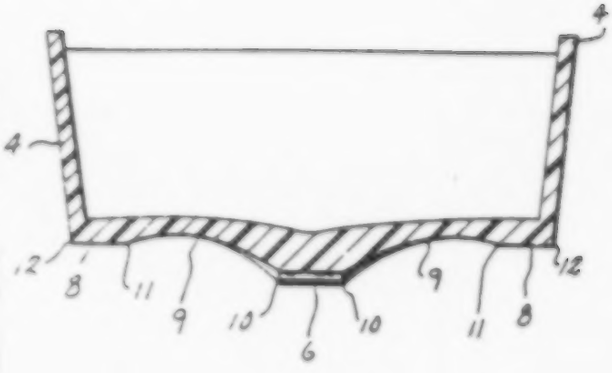


Fig. 6



1

BOAT HULL CONSTRUCTION

BACKGROUND OF THE INVENTION

Flat bottomed hulls are considered to have good planing characteristics due to the fact that there is a minimum amount of wetted surface and as a result there is a minimum drag as the speed is increased. However, flat bottomed hulls lack stability on turning and also have a tendency to produce a rough ride in choppy water.

V-bottom hulls are generally formed with a relative deep V at the bow which flattens out toward the stern. The V-hull has the advantage of being able to cut into heavy seas, although as the V cuts down into the water the water is displaced upwardly along the V and has a tendency to slap against the bottom of the hull. Furthermore, the V-bottom hull lacks lateral stability particularly in the forward areas.

More recently the tri-hull has become more popular in smaller boats. The tri-hull consists of a central V along with V's of lesser depth along the side edges of the hull. The tri-hull provides a substantial increase in lateral stability, particularly in the forward areas, but acts to increase the amount of wetted surface so that the planing characteristics of the tri-hull are adversely effected.

Various other types of modified V-hulls or tri-hulls have been used in the past in an attempt to obtain better planing characteristics or to increase the stability of the hull.

SUMMARY OF THE INVENTION

The invention relates to an improved boat hull construction which provides better planing characteristics as well as greater stability. In accordance with the invention, the bottom of the hull is formed with a central longitudinally extending flat surface which extends from the stern toward the bow. The central surface is flat in a lateral or cross-sectional direction, through its length. In addition, the bottom is provided with a pair of

side surfaces which are parallel to the central surface and are separated from the central surface by upwardly arched channels. Each side surface is flat in a lateral or cross-sectional direction throughout its length, and at any cross-sectional location, the side surfaces lie in a common plane.

The portion of the central surface located adjacent the stern is slightly concave in a longitudinal direction, while the side surfaces are slightly convex in a longitudinal direction.

The three parallel surfaces act in a manner similar to water skis and provide improved planing characteristics enabling the boat to plane at substantially lower speeds.

In addition, the side surfaces on the bottom of the hull provide excellent lateral stability for the hull, resisting tipping even when a substantial weight is applied to the gunwale.

The hull construction also provides improved turning characteristics which minimizes skidding during high speed turns and eliminates the problem of cavitation of the propeller which frequently occurs during high speed skids.

Other objects and advantages will appear in the course of the following description.

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DESCRIPTION OF THE DRAWINGS

The drawings illustrate the best mode presently contemplated of carrying out the invention.

In the drawings:

FIG. 1 is a bottom view of the boat hull construction of the invention;

FIG. 2 is a side elevation of the boat hull;

FIG. 3 is an end view of the bow of the hull;

FIG. 4 is an end view of the stern of the hull;

FIG. 5 is a section taken along line 5–5 of Fig. 2; and

FIG. 6 is a section taken along line 6–6 of FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The drawings illustrate a boat hull 1, which can be preferably formed as a hollow shell by molding reinforced plastic material, such as a mixture of a thermo-setting resin and glass fibers. In general, the hull is provided with a curved bow 2, and a generally squared off stern 3. Tapered sides 4 and a bottom 5 are connected to the stern and merge into the bow. The drawings illustrate the side surfaces 4 being relatively straight in a fore-and-aft direction, but it is contemplated that the sides 4 can be bowed or convex.

In accordance with the invention, the bottom 5 is formed with a central, longitudinally extending surface 6 which extends from the stern toward the bow. The surface 6 is generally flat in a lateral or cross-sectional direction, as best illustrated in FIGS. 3-6, and the surface 6 has a substantially constant width from the stern of the boat to a location at the bow. As shown in FIG. 1, the forward portion 7 of surface 6 at the bow is tapered inwardly to provide a lesser width, although the taper is not necessary to the invention. However, it is important that the portion of the surface 6 extending from the stern 3 to the bow 2 have a substantially constant width throughout its length so that it will function in the manner similar to that of a water ski.

In addition, to the central surface 6, the bottom 5 is provided with a pair of side surfaces 8 which are parallel to the central surface 6. As in the case of the central surface, the side surfaces 8 are generally flat in a lateral or cross-sectional direction and have a substantially constant width from the stern to a location adjacent the bow. The surface 6 has a substantially greater width than the width of the side surfaces 8.

Separating the central surface 6 from the side surfaces 8 are the upwardly arched channels 9. The channels 9 have a greater depth in the area toward the bow as shown in FIG. 3, and have a lesser depth in the area adjacent the stern as shown in FIG. 4. The central surface 6 is bordered by the relatively sharp,

The central surface 6 is bordered by the relatively sharp, parallel side edges 10, and similarly the side surfaces 8 are bordered by the relatively sharp side edges 11 and 12.

The channels 9 have a substantially constant lateral width from the stern to the bow and thus a vertical plane passing through the edges 10 is parallel to a vertical plane passing through the edges 11 of the side surfaces.

While the central surface 6 is generally flat in a lateral direction, the stern portion of the central surface 6 is provided with a slight concavity in a longitudinal direction, as indicated by 13. On the other hand, the side surfaces 8 are generally convex in a longitudinal direction as best illustrated in FIG. 2.

The three flat parallel surfaces 6 and 8 act to combine the best characteristics of a flat bottom full, a V-hull and a tri-hull. The three surfaces 6 and 8 act similar to water skis and minimize the amount of wetted surface, thereby reducing the drag and enabling the boat to plane at substantially lower speeds. In addition, the upwardly arched channels 9 provide a lift effect, which in combination with the flat surfaces 6 and 8, provides the improved planing characteristics. As the hull moves into the water, the surfaces 6 and 8 being flat will displace the water laterally outward from the respective surface in a generally horizontal direction and this water flow along with the air moving through the channels will provide a lifting effect to improve the planing characteristics of the hull.

The hull has improved turning capabilities because the relatively sharp edges 10 and 11 will act to dig into the water during a turn and prevent the hull from skidding. Thus, the hull provides a greater number of digging edges during a turn than either the normal V-hull or tri-hull, with the result that the stability is increased and the turning characteristics are improved.

The hull construction also has improved lateral stability due to the flat side surfaces 8 which extend from the stern forwardly toward the bow, enabling the hull to resist tipping even when a substantial weight is applied in the gunwale area. This feature also improves the buoyancy of the hull, permitting the hull to carry greater loads.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. A modified deep V boat hull construction, comprising a bottom having a central surface extending longitudinally from the stern toward the bow, said central surface being generally flat in a cross-sectional direction, said bottom having longitudinally extending side surfaces spaced laterally on either side of said central surface, said side surfaces being generally flat in a cross-sectional direction, at any cross-sectional plane through the hull the line of intersection of each of said side surfaces and said plane being horizontal and the

line of intersection of said central surface and said plane being horizontal and at a lower level than said first named lines of intersection, and said hull having longitudinally extending upwardly arched curved channels connecting said central surface with each side surface, said channels having a substantially uniform lateral width from the stern of the hull toward the bow.

2. The boat hull construction of claim 1, wherein the central surface has a substantially uniform lateral width from the stern to a location adjacent the bow and said side surfaces each have a substantially uniform lateral width from the stern to a location adjacent the bow.

3. The boat hull construction of claim 1, wherein the portion of the central surface disposed adjacent the stern has a slightly concave configuration in a stern-to-bow direction and

the side surfaces have a slightly convex configuration in a stern-to-bow direction.

4. The boat hull construction of claim 1, wherein the central surface has a greater lateral width than the side surfaces.

5. A modified deep V boat hull construction comprising a bottom having a central longitudinally extending generally V-shaped keel with the bottom of the keel terminating in a laterally flat central surface, said bottom having longitudinally downwardly extending generally V-shaped side ridges spaced laterally on both sides of the central keel, said side edges terminating in laterally flat side surfaces, at any vertical cross-sectional plane through the hull said side surfaces being generally parallel to each other and generally parallel to said central surface and said central surface being at a lower level than said side surfaces, and said hull having longitudinally extending upwardly arched continuously curved channels connecting said keel, with said side ridges, each of said channels having a greater lateral width than said central surface and having a greater lateral width than the individual side surfaces.

6. The boat hull construction of claim 5, wherein said central surface has a substantially uniform width in a lateral direction and said side surfaces each having a substantially uniform width in a lateral direction, said central surface having a greater width than said side surfaces.

* * * * *

264-225 CROSS REFERENCE SEARCH ROOM

Dec. 31, 1968 R. L. SMITH 3,419,646

METHOD FOR MAKING AN EARTH PIT MOLD FOR A PLASTIC BOAT HULL

Filed Sept. 13, 1966

Fig. 1.

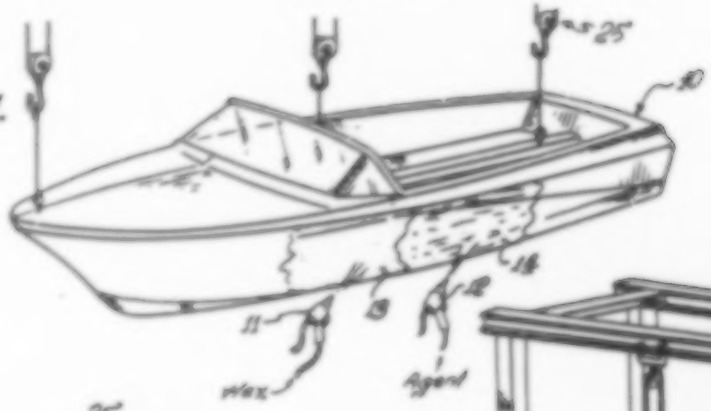


Fig. 2.

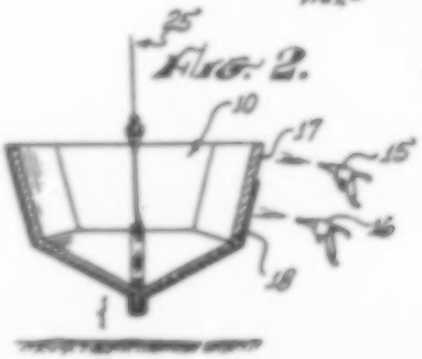


Fig. 5.

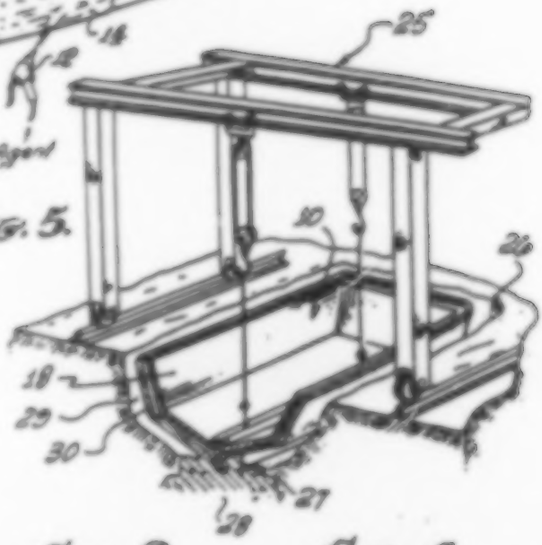


Fig. 6.

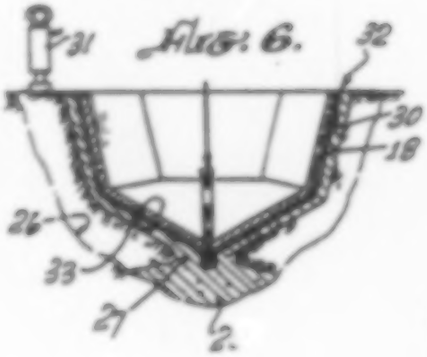


Fig. 3.

Fig. 4.

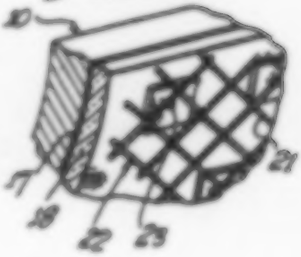


Fig. 8.

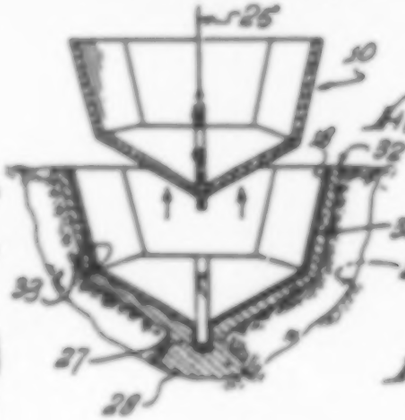
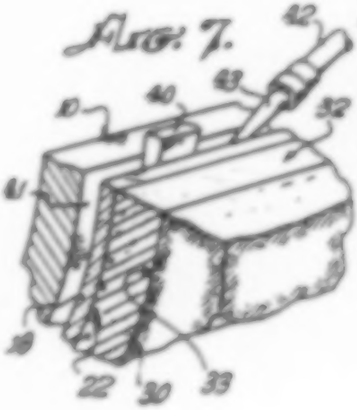


Fig. 7.



Inventor
Robert L. Smith,
By
Edward J. Sheridan
Attorney.

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United States Patent Office

3,419,646
Patented Dec. 31, 1968

3,419,646
METHOD FOR MAKING AN EARTH PIT MOLD FOR A PLASTIC BOAT HULL

Robert L. Smith, 1331 33rd St.
Bakersfield, Calif. 93301

Filed Sept. 13, 1966, Ser. No. 579,090
7 Claims. (Cl. 264--32)

This invention relates generally to the making of a mold to duplicate very large plastic objects, such as a fiberglass boat hull.

More particularly, the invention relates to such a method in which a prototype hull is first coated in several layers to form a precisely fitting mold liner structure, and thereafter, a massive mold supporting structure is formed from successive applications of steel reinforcing, spray-deposited concrete, and tamped earth, within a mold-accommodating pit.

Plastic-covered fiberglass has become the most widely accepted material for small boat hulls. Beginning a few years ago with pleasure boat hulls ten or twelve feet long, fiber glass construction has slowly displaced wood as the most popular material in boat hulls of greater and greater length. At the present time, fiber glass boat hulls between thirty and fifty feet in length are not uncommon and may come to dominate the field.

Although such boat hulls are referred to as "small," because they are small in size relative to the full range of boats and ships, they must be considered as enormous plastic moldings, since they dwarf almost all objects molded from plastic outside the boat hull field. However, it will be understood that large objects other than boat hulls are being fabricated from fiber glass plastic, and the method prescribed herein is intended to be claimed with respect to other large objects, although its

best present use and the following explanation of its application, is made with reference to a boat hull which is large with reference to the molded dories and outboard motor boats which have been mass-produced from fiber glass plastic in past years.

The construction of a mold for the larger plastic molded boat hulls has, in the past, required a major capital investment for each mold. It is a major object of the present invention to provide a method for making large molded boat hull molds at very low cost, once a prototype hull has been provided. Such a hull may be a fiber glass boat hull built from an extremely expensive prototype model or the prototype hull may be a wooden hull constructed by conventional means, which it is now desired to reproduce in fiber glass.

By means of the method herein disclosed, a number of relatively inexpensive molds may be constructed in order to expand production facilities. On the other hand, no costly and expensive mold of large size needs to be stored, as long as a single prototype of the desired boat hull is available from any source. Finally, a very large mold can be stored conveniently in many shipyards and boatworks, since the mold of the first construction is supported below the surface of the earth and may be filled in to ground level when not in use, and then excavated later.

Large boat hull molds presently constructed require massive external reinforcing. This reinforcing is generally of steel, and has several undesirable characteristics. It is subject to temperature expansion and contraction. The massive weight of the hull may cause the mold to be deformed in the later stages of construction. It is a major object of the present invention to eliminate most of the costly steel bracing and supporting structure, and to provide an even stronger structure comprised of reinforced concrete and tamped earth in an earth pit.

Another major object of the invention is to provide a

massive boat hull mold in which the mold is lined with a fine, smooth, and perfectly duplicating liner surface, and supported

on a mold support structure as previously mentioned, but in which the entire mold construction, both liner and mold support, are unitary and integrated in a single solid unit. Large molds of the past have often been subject to failure because the liner and the mold support were not truly unitary in construction, and one part yield to the destructive deformation of the other.

The foregoing, and other objects and advantages of the invention will be understood from the following description of one preferred method for the practice of the invention, the steps of said method being illustrated in the accompanying drawings, in which:

FIGURE 1 is a perspective view of a prototype hull, which is shown suspended from the pulleys of a travelling crane, while it receives certain mold-release coatings;

FIGURE 2 is a transverse sectional view of the prototype hull of FIGURE 1, as it receives the plastic liner material which is used to form the precision fitting inner surface layer of the mold;

FIGURE 3 is a perspective view of a fragment of the prototype hull, shown partly in section, and revealing the step of attaching furring patches;

FIGURE 4 is a perspective view of the fragment of FIGURE 3, showing the step of attaching steel netting reinforcement spaced outward from the mold liner layer;

FIGURE 5 is a perspective view of the prototype hull, transversely sectioned at about mid-length, as it appears in the mold-supporting pit, after the application of cement;

FIGURE 6 is a transveres sectional view of the prototype hull and mold showing the step of tamping earth into mold-supporting position;

FIGURE 7 is a perspective view of an enlarged fragment of hull, mold, and earth, seen partly in cross-section and showing the wedge and water nozzle used for achieving the separation of the prototype hull; and

FIGURE 8 is a transverse sectional view of the mold pit and the prototype hull as it is lifted out of the pit-supported mold produced by the process of the invention.

In FIGURE 1, a prototype hull 10, which it is desired to reproduce, is shown in perspective as it is suspended from a crane. Usually, the prototype will itself be a fiberglass plastic boat, but it is to be understood that the method of the invention is well-suited to making fiber glass reproductions of suitable steel or wood hulls.

Since the mold will exactly reproduce the surface of the prototype, a first and important step is to render that surface as perfect as possible. The entire surface should be finished to perfect contour and nearly perfect smoothness, by patching, if necessary, and then finishing to a smooth, slick and glasslike surface by any suitable finishing means; for example, by means of fine sandpaper and rubbing compound.

The next two steps are concerned with applying two very thin coats of mold-releases material, which will play an important part in securing the release of the prototype hull 10 from the final and completed mold. In the preferred method, the smoothly finished prototype 10 is first sprayed with a thin layer of any standard mold wax, as indicated by the spray gun 11. When the wax coat has suitably dried, the entire surface is sprayed a second time, this time by a water-soluble mold release agent; for example, a very suitable release agent for this step is a polyvinyl-alcohol-silicone material in liquid form. The spraying of this second release material is indicated by the spray gun 12, and the two different coatings are indicated in FIGURE 1 by the surface texturing at 13 and 14 respectively.

After the two, relatively thin release coatings have been applied, as described in connection with FIGURE 1, a

mold liner layer, precisely conforming to the prototype hull, and providing a perfect mold surface, is deposited on the suspended prototype hull over the already deposited release coatings, as indicated in FIGURE 2. The liner coat is formed by two spraying steps indicated in FIGURE 2 by the spray guns 15 and 15.

Spray gun 15 deposits a coat of polyester tooling gelcoat, approximately 20 mils in thickness. This material is the first layer of the mold that is being made, and becomes the exposed inside surface of the mold.

Next, spray gun 16 deposits a mixture of polyester resin, catalyst, and chopped fiberglass, approximately one-quarter of an inch in thickness. This material constitutes the walls of the mold.

In the drawing of FIGURE 2, the mold release coatings and the gelcoat are treated as so thin as not to be possible to represent in the cross-sectional portion of FIGURE 2 at the region 17. However, the fiberglass material is represented as a layer visible in cross-section over the rest of the prototype hull at 18.

While the resin and fiberglass layer 18 is still fresh and tacky, pieces of cardboard or similar material, approximately 2 inches square and ⅜ inch in thickness are placed in position, at spaced intervals, over the tacky polyester surface, as seen in the enlarged fragmentary view of FIGURE 3. These pieces are used as furring blocks to support steel reinforcing mesh at suitable spacing away from the polyester surface. The spacing is not critical, but should be sufficiently close to insure good strength and adhesion for the subsequent steel reinforcing mesh and concrete. The furring blocks are indicated in FIGURE 3 by the numeral 21.

In the next step, illustrated in FIGURE 4, steel reinforcing mesh, such as one-inch stucco netting, indicated by the numeral 22, is attached to the furring blocks 21 by means of

staples 23 or the like, so that the mesh is supported spaced outwardly from the polyester and fiber glass mold layer.

The next step is to form the massive concrete shell portion of the mold, which entirely encloses and supports the mold liner comprised of gelcoat 17 and fiber glass 18. This layer is so massive that it cannot be formed and retained on the prototype hull 10 as it is suspended in the manner illustrated in FIGURES 1 and 2.

Instead, the concrete shell is built up with most of the weight supported in an earth pit as illustrated in FIGURE 5. The fiber glass-coated hull described in connection with FIGURE 2 is transported by the crane 25, and lowered into a large earth pit indicated in FIGURE 5 by the numeral 26. Just before the hull 10 is lowered into pit 26, a pad of wet cement, about one foot thick, is deposited by the gunnite method in the bottom of the pit 26 at 27, the initial pad being indicated by the numeral 28. The bottom of the fiber glass-covered prototype 10 is allowed to rest on the pad 28, but the hull 10 continues to be suspended from the crane 25 in an upright position, leaving a space 29 exterior to the prototype hull 10 and its preliminary fiber glass covering 18. Preferably, this space 29 is about four feet larger, all the way round, than the prototype hull 10, so that there is ample room for workmen to get into the pit and to perform the next step of depositing the gunnite concrete layer, which is indicated in FIGURE 5 by the numeral 30.

The step of forming concrete layer 30 by gunnite spraying is carried out while the prototype hull 10 is suspended as shown in FIGURE 5, to a thickness of about 4 inches in a typical case. Of course, this entirely encloses the mold liner layers of gelcoat 17 and fiber glass 18, as well as the furring blocks 21 and the steel reinforcing net 22.

When the gunnite layer 30 has been completed, the hull 10 and the mold layers 17, 18, and 29 appear as illustrated in FIGURE 5.

After the concrete has hardened, earth is filled in to the space 29 as illustrated in FIGURE 6, being tamped

into position as the filling proceeds. For example, a pneumatic tamper 31 may be employed.

It will be seen that a mold 32 has now been fully constructed and is now supported by the filled pit 33.

It is now necessary to release the prototype hull 10 from the mold 32, as illustrated in the enlarged detail of FIGURE 7. Release is achieved by driving small wedges 40 between the outer surface of the prototype hull 10 and the liner face layer 17 of the mold 32 at spaced intervals along the upper line of contact between the two. The use of these wedges creates a small opening indicated by the numeral 41 between the prototype hull 10 and the mold 32, and water under pressure is forced into the space 41 by any suitable means, but in the illustration, by hose 42 and nozzle 43. Water thus introduced under pressure into space 41 washes away the soluble mold release coating 14, and permits the prototype hull 10 to be lifted clear of mold 32 by crane 25 as illustrated in the transverse-sectional view of FIGURE 8.

It will be evident that the mold 32 is rigidly and firmly supported over its entire surface by the tamped earth 33, so that it is unlikely that the gunnite layer 30 or the liner layers 17 and 18 will ever crack or deform as a result of lack of adequate support, even under heavy use and the introduction into the mold 32 of heavy weight.

The mold 32 is now ready for the building of a new hull by spraygun deposition of glass fibers and resin. Of course, before spraying has begun, the entire liner surface (gelcoat surface 17) should be covered with suitable mold release agents, such as the water soluble agent 14 and wax layer 13.

In larger hulls, some type of reinforcing elements may be suspended before any fiber glass spraying is done, or at some stage after a certain amount of fiber glass material has been laid down. For example, steel keel members, reinforcing panels, steel engine bases, trans members may be used. Wood

beams, laminated wood, preformed plastic laminations, or metal reinforcements of stainless steel or brass may be embedded in the fiber glass plastic design.

The fiber glass boat hull, or other like item of construction is built up in a manner well known to those familiar with the art of fiber glass-plastic construction. Ordinarily, a combination of three spray guns simultaneously deposit, at substantially the same spot, particles of fiber glass filler, catalysts, and resin respectively. The liquid binder resin may comprise any of a number of suitable resins, such as one of the synthetic polyesters, epoxide, or phenolic resins containing cure-promoting agents. Likewise, the catalysts may be of any of a number of known and commercially available catalysts suitable for the resin used. Usually, the resin gun will blow the polyester resins in liquid form, whereas the catalyst gun may deliver a jet of powdered cobalt catalyst. The blown mix is built up to desired thickness as the cluster of guns is moved about to form the hull.

It will be seen from the foregoing description that I have provided a novel and extremely economical method for building boat hulls of the largest size deemed practical for fiber glass construction. It should be understood that the scope of the invention is not limited to the details and precise dimensions set forth for purposes of illustration in the foregoing example, which was described in specific detail. Instead, all modifications, variations, and improvements which fall within the scope of the following claims are included within the scope of the present invention.

What is claimed is:

1. A method for making a mold for reproduction in plastic construction of a prototype hull or the like, which method includes the steps of:

preparing a surface of said prototype hull with a coating of water-soluble mold release material;

depositing a mold liner layer of plastic material over said mold release coating;

attaching furring spacers to said plastic coating;

curing said liner coating;

attaching reinforcing means to said furring means;

supporting said prototype hull in an upwardly opening position in an earth pit having sides spaced away from the outer coated sides of said hull partly by suspension from above and partly by resting the lowermost surface of said hull in a pad of soft concrete in the bottom of said pit;

spraying a wet concrete mixture over the plastic coating and said reinforcing and furring means, on the outer surfaces of said hull to make a rigid mold support structure in the form of a concrete shell integral with said liner layer;

after said concrete shell has hardened, filling the space in said earth pit outside the shell with packed earth to firmly support said mold; and

introducing water between the outer surface of said prototype hull and said mold liner layer, to wash away said water soluble mold release material and permit the withdrawal of said prototype hull.

2. A method as described in claim 1 in which:

said furring spacers are attached to said plastic coating by adhesion in said coating while said coating is still in an uncured and tacky state.

3. A method as described in claim 1 in which:

said preparation of the surface of said prototype hull comprises forming a two-layer mold release coating on the prototype surface by first spraying said surface with a suitable mold wax, and then spraying said wax-coated surface with a water-soluble mold release coating comprised of a silicone material transported in the spray of a readily vaporizable organic solvent.

4. A method as described in claim 1 in which:

said mold liner layer is formed by spraying onto said mold release coating a structurally rigid layer comprised primarily of plastic material incorporating catalysts and fiber glass filler;

and said furring means are pressed into position on said fiber glass-plastic coat while it is still in an uncured and tacky condition.

5. A method as described in claim 4 in which:
said prototype with said applied coatings, furring spacers, and reinforcing means is placed in said earth pit with most of the weight of said prototype supported on a pad of concrete which is still in a wet and unhardened condition, so as to accommodate

the lowermost surface of said prototype; and the mold shell structure is subsequently completed by gunnite spraying the sides of said coated prototype to fully enclose and cover said furring blocks and said reinforcing means

6. A method as described in claim 1, in which:
filling the space in between the outer surfaces of said mold shell and the sides of said pit and tamping said earth into compacted condition to provide rigid support over the entire outer surface of said mold shell;
spaced openings are formed between the upper peripheral edge of said prototype and said concrete shell, prior to the hardening of the concrete; and
said prototype hull is separated from said concrete, subsequent to its hardening by the introduction of water under pressure into said spaced openings.

7. A method as described in claim 1 in which:
said mold liner, said furring spacers, and said reinforcing means are attached by the following steps;
forming a two-layer mold liner by first spraying on said mold release coating a layer of plastic gelcoat, and after curing of said gelcoat, spraying on a structurally rigid layer of plastic material incorporating catalysts and fiber glass filler;
attaching furring blocks to said liner by pressing said furring blocks into position on said fiber glass-plastic coat while it is still in an uncured and tacky condition; and
attaching a reinforcing mesh to said furring blocks by fastener means penetrating said blocks.

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ROBERT F. WHITE, *Primary Examiner.*

K. J. HOVET, *Assistant Examiner.*

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OR D 235,753

United S...

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BOAT HULL

Harry Bremer, Box 488, Elkhart Lake, Wis. 53020

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Fig. 1

Fig. 2

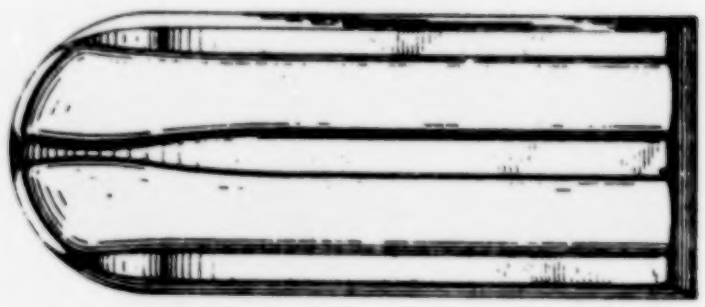

Fig. 3

Fig. 4

FIG. 1 is a side elevation of the boat hull.
FIG. 2 is a bottom view of the boat hull;
FIG. 3 is a view of the bow of the boat hull;
FIG. 4 is a view of the stern of the boat hull.

I claim:

The ornamental design for a boat hull, substantially as shown and described.

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